भारतीय मानक

Indian Standard

IS 14716 : 2021

भुकृत्रिम — भुवस्त्रादि और भुवस्त्रादि सम्बंधित उत्पादों का प्रति इकाई क्षेत्र में द्रव्यमान निर्धारण करने की परीक्षण विधि

(पहला पुनरीक्षण)

Geosynthetics — Test Method for the Determination of Mass Per Unit Area of Geotextiles and Geotextile-Related Products

(First Revision)

ICS 59.080.70

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September 2021 **Price Group 3**

Geosynthetics Sectional Committee, TXD 30

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Geosynthetics Sectional Committee had been approved by the Textiles Division Council.

This standard was originally published in 1999 and was based on ISO 9864 : 1990 ‘Geotextiles — Determination of mass per unit area’. The first revision of this standard has been undertaken to incorporate the following major changes:

a) Scope has been modified;
b) Optional provision for use of suitable template, GSM cutter or cutting die has been specified for specimen preparation; and
c) Procedure for specimen preparation for geosynthetic clay liner has been incorporated.

In formulation of this standard considerable assistance has been derived from ISO 9864 : 2005 ‘Geosynthetics — Test method for the determination of mass per unit area of geotextiles and geotextile-related products’.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’.

Indian Standard

GEOSYNTHETICS — TEST METHOD FOR THE DETERMINATION OF MASS PER UNIT AREA OF GEOTEXTILES AND GEOTEXTILE-RELATED PRODUCTS

(First Revision)

1 SCOPE

1.1 This standard specifies a method for the determination of mass per unit area of geotextiles and geotextile-related products for identification purposes and for use in technical data sheets.

1.2 This test method is applicable to all geotextiles and geotextile-related products.

2 REFERENCES

The standards listed in Annex A contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subjected to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 PRINCIPLE

The mass per unit area is calculated by weighing square or circular specimens of known dimensions cut from positions distributed over the full width and length of the specimen.

4 PROCEDURE

4.1 Specimen Preparation

4.1.1 At least 10 specimens of a nominal size of 100 cm^2 shall be cut by using a cutting die as per method prescribed in IS 14706.

NOTE — Depending upon the type of product, suitable template, GSM cutter or cutting die may also be used.

4.1.2 Specimens shall be cut in such a way that they are representative of the material to be tested. Measure the specimens to an accuracy of 0.5 percent.

NOTE — If the structure of the product is such that a 100 cm^2 specimen is not representative, it may be necessary to use a larger specimen size in order to achieve the necessary accuracy of measurement.

4.1.3 Geotextile-related products with relatively large mesh sizes, such as geogrids or geonets – shall be cut half way between two links of the constituent elements. A specimen shall include at least 5 constituent elements in both directions. The area of the specimen shall be individually determined for each specimen.

4.1.4 Geosynthetic clay liners having bentonite clay inside them shall be marked with permanent marker with template of size 20 × 20 cm. A paper or plastic sheet shall be used below geosynthetic clay liners specimen before cutting, for collecting the bentonite which is coming out of the cut edge. This bentonite clay shall be weighed along with cut specimen to avoid loss in overall mass of geosynthetic clay liner.

4.2 Conditioning

Condition the test specimen at 27±2 °C and 65±5 percent relative humidity for not less than 24 h prior to test, unless it can be shown that the results are not affected by omitting this procedure according to the method prescribed in IS 6359.

4.3 Weighing

Specimens shall be weighed to an accuracy of 10 mg.

5 EXPRESSION OF RESULTS

5.1 Calculate the mass per unit area (P_A) of each specimen, expressed in grams per square metre, using the equation given below:

$$P_A = \frac{m \times 10\,000}{A}$$

where

m = is the mass of the specimen, in g; and

A = is the area of the specimen, in cm^2.

5.2 Calculate the mean mass per unit area, rounding the result to the nearest gram per square metre, and the coefficient of variation.

6 TEST REPORT

6.1 The test report shall include the following particulars:

a) statement that the test was performed in accordance with this standard;

b) number of specimens tested;

c) conditioning atmosphere used;

d) in case of a specimen size larger than 100 cm^2, the size used, and a description (words, sketch or photograph) of the structure;

e) mean value of mass per unit area, in grams per square metre;

f) coefficient of variation;

g) details of any deviation from the specified test procedure; and

h) date of the test.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
6359 : 1971	Method for conditioning of textiles
14706 : 1999	Geotextiles sampling and preparation of test specimens

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Geosynthetics Sectional Committee, TXD 30

Organization	*Representative(s)*
The South India Textile Research Association Council, Coimbatore	Dr A. N. Desai (***Chairman***)
Ahmedabad Textile Industry's Research Association, Ahmedabad	Shrimati Deepali Plawat Shri Jigar Dave (*Alternate*)
Best Geotechnique Pvt Ltd, Mumbai	Shri Satish Naik
Central Coir Research Institute, Alappuzha	Dr Anita Jacob Shrimati Sumy Sebastian (*Alternate*)
Central Road Research Institute, New Delhi	Shri Sudhir Mathur Shri Jai Bahagwan (*Alternate*)
Central Soil and Materials Research Station, New Delhi	Dr R. Chitra Dr Manish Gupta (*Alternate*)
Charankattu Coir Mfg Co (P) Ltd, Kerala	Shri C. R. Devraj Shri C. D. Athul Raj (*Alternate*)
Department of Jute and Fibre Technology, Kolkata	Dr Swapan Ghosh Prof (Dr) A. K. Samantha (*Alternate*)
DKTE Centre of Excellence in Nonwovens, Ichalkaranji	Shri Aniket S. Bhute
Ganga Flood Control Commission, Patna	Shri A. K. Sinha Shri Manoj Kumar (*Alternate*)
Garware Wall Ropes Ltd, Pune	Shri Tirumal Kulkarni Shri Rajendra Ghadge (*Alternate*)
Geosynthetics Testing Services Pvt Ltd, Ahmedabad	Shri Ravikant Sharma
ICAR-National Institute of Natural Fibre Engineering and Technology, Kolkata	Dr Sanjoy Debnath Dr Kartick Samanta (*Alternate*)
Indian Institute of Technology, Gandhinagar	Prof Amit Prashant
Indian Institute of Technology, Delhi	Prof A. K. Ghosh
Indian Jute Industries' Research Association, Kolkata	Dr Mahuya Ghosh Shri Palash Paul (*Alternate*)
Indian Jute Mills Association, Kolkatta	Shri S. K. Chandra Shri J. K. Behera (*Alternate*) Shri Bhudipta Saha (*Young Professional*)
Indian Technical Textile Association, Mumbai	Dr Anup Rakshit Shrimati Ruchita Gupta (*Alternate*)
International Geosynthetics Society, India Chapter, New Delhi	Shri M. Venkataramn Dr G. P. Patel (*Alternate*)
Kusumgar Corporates, Mumbai	Shri Y. K. Kusumgar Dr M. K. Talukdar (*Alternate*)
Landmark Material Testing and Research Laboratory Pvt Ltd, Jaipur	Dr Anil Dixit Shri Harsh Kumar Chittora (*Alternate*)

Organization	*Representative(s)*
Macaferri Environmental Solutions Pvt Ltd, Navi Mumbai	Dr Ratnakar Mahajan Shrimati Minimol Korulla (*Alternate*)
Megaplast India Pvt Ltd, Daman	Shri C. V. Rajesh Shri Tatwadarsi S. Tripathy (*Alternate*)
Ministry of Road Transport and Highways, New Delhi	Shri Sanjiv Kumar
Municipal Corporation of Greater Mumbai, Thane	Dr Vishal Ramesh Thombare Shri Mandar Bhalchandra Pingle (*Alternate*)
National Highways Authority of India, Ghaziabad	Shri Rakesh Prakash Singh Shri Mudit Garg (*Alternate*)
National Jute Board, Kolkatta	Shri P. K. Choudhury Shri M. Dutta (*Alternate*)
Office of the Jute Commissioner, Kolkatta	Shri R. K. Roy Shri Soumyadipta Datta (*Alternate*)
Office of the Textile Commissioner, Mumbai	Shri Sivakumar S. Shri Sanjay Charak (*Alternate*)
Premier Polyfilms Ltd, Ghaziabad	Shri Amitaabh Goenka Shri Praveen Kumar (*Alternate*)
Reliance Industries Ltd, New Delhi	Shri V. Ravikanth Shri Rajendren Subramanian (*Alternate*)
Strata Geosystems (I) Pvt Ltd, Mumbai	Shri Narendra Dalmia Shri Shahrokh Bagli (*Alternate*) Shri Suraj Vedpathak (*Young Professional*)
Techfab India, Mumbai	Shri Anant Kanoi Shri Saurabh Vyas (*Alternate*)
Texel Industries Limited, Gandhinagar	Shri Shailesh R. Mehta Shri Anil Sharma (*Alternate*)
The Bombay Textile Research Association, Mumbai	Dr Sreekumar Shri G. R. Mahajan (*Alternate*)
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In personal capacity [*104, Kanchanban, A. W. Vartak Marg, Vile Parle* (*East*), *Mumbai 400 057*]	Shri V. N. Gore
BIS Directorate General	Shri A. K. Bera, Scientist 'F' and Head (TXD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shri J. K. Gupta
Scientist 'E' (TXD), BIS

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